CLAIMS

What we claim:

1. A HierarchicalSummary Description Scheme (DS) for describing a video summary, the HierarchicalSummary DS comprises at least one HighlightLevel DS which is describing highlight level, wherein said HighlightLevel DS comprises at least one HighlightSegment DS which is describing highlight segment information constituting the summary video of the highlight level.

2. The HierarchicalSummary DS according to claim 1, wherein said HighlightLevel DS is composed of at least one lower level HighlightLevel DSs.

3. The HierarchicalSummary DS according to claim 1, wherein said HighlightSegment DS comprises a VideoSegmentLocator DS which is describing time information or video itself of said corresponding highlight segment. 4. The HierarchicalSummary DS according to claim 3, wherein said HighlightSegment DS further comprises ImageLocator DS which is describing the representative frame of said corresponding highlight segment.

5. The HierarchicalSummary DS according to claim 3, wherein said HighlightSegment DS further comprises SoundLocator DS which is describing the representative sound information of said corresponding highlight segment.

6. The HierarchicalSummary DS according to claim 3, wherein said HighlightSegment DS further comprises ImageLocator DS which is describing the representative frame of said corresponding highlight segment and SoundLocator DS which is describing the representative sound information of said corresponding highlight segment.

7. The HierarchicalSummary DS according to claim 4, wherein said ImageLocator DS describes time information or image data of the representative frame of video interval corresponding to said corresponding highlight segment.

8. The HierarchicalSummary DS according to claim 3, wherein said HighlightSegment DS further comprises AudioSegmentLocator DS which is describing the audio segment information constituting an audio summary of said corresponding highlight segment.

9. The HierarchicalSummary DS according to claim 8, wherein said AudioSegmentLocator DS describes time information or audio data of the audio interval of said corresponding highlight segment.

10. The HierarchicalSummary DS according to claim 1, wherein said HierarchicalSummary DS includes SummaryComponentList describing and enumerating all of the SummaryComponentTypes which is included in the HierarchicalSummary DS.

11. The HierarchicalSummary DS according to claim 10, wherein said SummaryComponentType includes keyFrames representing the key frame summary composed of representative frames, keyVideoClips representing the key video clip summary composed of key video segment' sets, keyEvents representing the summary of the video interval corresponding to either the event or the subject, keyAudioClips representing the key audio clip summary composed of representative audio intervals' sets, and unconstraint representing the type of summary defined by users except for said summaries.

12. The HierarchicalSummary DS according to claim 1, wherein said HierarchicalSummary DS includes SummaryThemeList DS which is enumerating the event or subject comprised in the summary and describing the ID and then describes event based

summary and permits the users to browse the summary video by the event or subject described in said SummaryThemeList

13. The HierarchicalSummary DS according to claim 11, wherein said SummaryThemeList DS includes arbitrary number of SummaryThemes as elements and said SummaryTheme includes an attribute of id representing the corresponding event or subject.

14. The HierarchicalSummary DS according to claim 13, wherein said SummaryTheme further includes an attribute of parentID which is to describe the id of the event or subject of the upper level.

15. The HierarchicalSummary DS according to claim 13, wherein said HighlightLevel DS includes an attribute of themeIds describing said attribute of ids of common events or subjects if all of the HighlightSegments and HighlightLevels which are constituting corresponding highlight level have common events or subjects.

16. The HierarchicalSummary DS according to claim 13, wherein said HighlightSegment DS includes an attribute of themeIds describing said attribute of id and describes the event or subject of the corresponding highlight segment.

17. A computer-readable recording medium where a HierarchicalSummary DS is stored therein, the HierarchicalSummary DS comprises at least one HighlightLevel DS which is describing highlight level, wherein said HighlightLevel DS comprises at least one HighlightSegment DS which is describing highlight segment information constituting the summary video of that the highlight level, wherein said HighlightSegment DS comprises VideoSegmentLocator DS describing time information or video itself of said corresponding highlight segment.

18. A method for generating video summary description data according to video summary description scheme by inputting original video, comprising:

video analyzing step which is producing video analysis result by inputting the original video and then analyzing the original video;

summary rule defining step which is defining the summary rule for selecting summary video interval;

summary video interval selecting step which is constituting summary video interval information by selecting the video interval capable of summarizing video contents from the original video by inputting said original video analysis result and said summary rule; and

video summary describing step which is producing video summary description data according to the HierarchicalSummary DS by inputting the summary video interval information output by said summary video interval selecting step.

19. The method for generating video summary description data according to claim 18, wherein said HierarchicalSummary DS comprises at least one HighlightLevel DS which is describing highlight level, wherein said HighlightLevel DS comprises at least HighlightSegment DS which is describing highlight segment information constituting the summary video of the highlight level, wherein said HighlightSegment DS comprises VideoSegmentLocator DS describing time information or video itself of said corresponding highlight segment.

20. The method for generating video summary description data according to claim 18, wherein said video analyzing step comprises:

feature extracting step which is outputting the types of features and video time interval at which those features are detected by inputting the original video and extracting those features;

event detecting step which is detecting key events included in the original video by inputting said types of features and video time interval at which those features are detected; and

episode detecting step which is detecting episode by dividing the original video into story flow base on the basis of said detected event.

21. The method for generating video summary description data according to claim 18, wherein said summary rule defining step provides the types of summary events, which are bases in selecting the summary video interval, after defining them to said video summary describing step.

22. The method for generating video summary description data according to claim 18, the method further comprises representative frame extracting step which is providing the representative frame to said video summary describing step by inputting said summary video interval information and extracting representative frame.

23. The method for generating video summary description data according to claim 18, the method further comprises representative sound extracting step which is providing the representative sound to said video summary describing step by inputting said summary video interval information and extracting representative sound.

24. A computer-readable recording medium where a program is stored therein, the program is to execute:

feature extracting step which is outputting the types of features and video time interval at which those features are detected;

event detecting step which is detecting key events included in the original video by inputting said types of features and said video time interval at which those features are detected;

episode detecting step which is detecting episode by dividing the original video into story flow base on the basis of said detected key events;

summary rule defining step which is defining the summary rule for selecting the summary video interval;

summary video interval selecting step which is constituting summary video interval information by selecting the video interval capable of summarizing the video contents of the original video by inputting said detected episode and said summary rule; and

video summary describing step which is generating video summary description data with HierarchicalSummary DS by inputting the summary video interval information output by said summary video interval selecting step.

25. A system for generating video summary description data according to video summary description scheme by inputting original video, comprising:

video analyzing means for outputting video analysis result by inputting original video and analyzing the original video;

summary rule defining means for defining the summary rule for selecting the summary video interval;

summary video interval selecting means for constituting summary video interval information by selecting the video interval capable of summarizing the video contents of the original video by inputting said video analysis result and said summary rule; and

video summary describing means for generating video summary description data with HierarchicalSummary DS by inputting the summary video interval information output by said summary video interval selecting means.

26. The system for generating video summary description data according to claim 25, wherein said HierarchicalSummary DS comprises at least one HighlightLevel DS which is describing highlight level, wherein said HighlightLevel DS comprises at least one

HighlightSegment DS which is describing highlight segment information constituting the summary video of the highlight level, wherein said HighlightSegment DS comprises VideoSegmentLocator DS describing time information or video itself of said corresponding highlight segment.

27. The system for generating video summary description data according to claim 25, wherein said video analyzing means comprises:

feature extracting means for outputting the types of features and video time interval at which those features are detected by inputting the original video and extracting those features;

event detecting means for detecting key events included in the original video by inputting said types of features and video time interval at which those features are detected; and

episode detecting means for detecting episode by dividing the original video into story flow base on the basis of said detected event.

28. The system for generating video summary description data according to claim 25, wherein said summary rule defining means provides the types of summary events, which are bases in selecting the summary video interval, after defining them to said video summary describing means.

29. The system for generating video summary description data according to claim 25, the system further comprises representative frame extracting means for providing the representative frame to said video summary describing means by inputting said summary video interval information and extracting representative frame.

30. The system for generating video summary description data according to claim 25, the system further comprises representative sound extracting means for providing

the representative sound to said video summary describing means by inputting said summary video interval information and extracting representative sound.

31. A computer-readable recording medium where a program is stored therein, the program is for functioning:

feature extracting means for outputting the types of features and video time interval at which those features are detected;

event detecting means for detecting key events included in the original video by inputting said types of features and said video time interval at which those features are detected;

episode detecting means for detecting episode by dividing the original video into story flow base on the basis of said detected key events;

summary rule defining means for defining the summary rule for selecting the summary video interval;

summary video interval selecting means for constituting summary video interval information by selecting the video interval capable of summarizing the video contents of the original video by inputting said detected episode and said summary rule; and

video summary describing means for generating video summary description data with HierarchicalSummary DS by inputting the summary video interval information output by said summary video interval selecting step.

32. A Video browsing system in a server/client circumstance, comprising:

a server which is equipped with video summary description data generation system which generates video summary description data on the basis of HierarchicalSummary DS by inputting original video and links said original video and video summary description data; and

a client which is browsing and navigating video by overview of said original video and access to the original video of said server using said video summary description data.